EMERSON
Network Power

RTM-ATCA-7350

Installation and Use

6806800H30F

February 2010

Trademarks

Notice

Limited and Restricted Rights Legend

Contact Address

Emerson Network Power - Embedded Computing GmbH

Lilienthalstr. 15

85579 Neubiberg-Munich/Germany

Contents

List of Tables

List of Figures

About this Manual

Overview of Contents

This manual is intended for the users who install and configure the RTM-ATCA-7350 of the server blade. The user must be a professional engineer in the server device field, who has been trained and is able to identify danger levels when operating the device.

This manual describes the structure, appearance, functions, technical specifications, precautions, and installation procedure of the RTM-ATCA-7350. In addition, it also provides information of the components supported by the RTM-ATCA-7350 and describes how to install and replace the components.

This manual is divided into the following chapters and appendix.

Abbreviations

This document uses the following abbreviations:

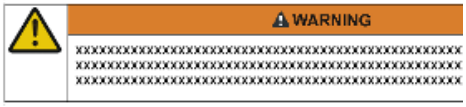
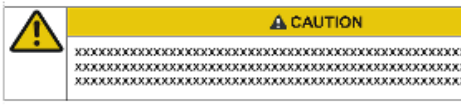
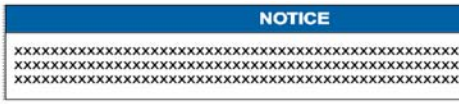
Abbreviation	Definition
ACA	Australian Communications Authority
BIOS	Basic Input Output System
BMC	Baseboard Management Controller
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
DC	Direct Current
DIMM	Dual Inline Memory Module
ECC	Error Checking and Correcting
EIA	Electronics Industries Association
EMC	Electromagnetic Compatibility
ESD	Electro-Static discharge
FBD	Fully Buffer DIMM
FC	Fiber Channel

Abbreviation	Definition
FCC	Federal Communications Commission
FRU	Field Replaceable Unit
GE	Gigabit Ethernet
IEC	International Electrotechnical Commission
IPMB	Intelligent Platform Management BUS
IPMC	Intelligent Platform Management Controller
IPMI	Intelligent Platform Management Interface
KVM	Keyboard, Video, and Mouse
OOS	Out of Service
PCI	Peripheral Component Interconnect
RTM	Rear Transition Module
SCSI	Small Computer System Window
SDR	Sensor Data Record
SEL	System Event Log
ShMC	Shelf Management Controller
SOL	Serial Over LAN
UL	Underwriters Laboratories Inc.
USB	Universal Serial Bus

Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
bold	Used to emphasize a word
`Screen`	Used for on-screen output and code related elements or commands in body text
`Courier + Bold`	Used to characterize user input and to separate it from system output
Reference	Used for references and for table and figure descriptions
File > Exit	Notation for selecting a submenu
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description

Notation	Description
...	Repeated item for example node 1, node 2, ..., node 12
. . .	Omission of information from example/command that is not necessary at the time being
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
|	Logical OR
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury
	Indicates a property damage message
	No danger encountered. Pay attention to important information

Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Publication Date	Description
6806800H30A	March 2008	First edition
6806800H30B	August 2008	Added Backplane Connectors (zone 3) to Chapter 3, *Controls, LEDs and Connectors,* on page 37.
6806800H30C	January 2009	Third edition
6806800H30D	November 2009	Updated Section *Installing RTM-ATCA-7350* on page 30.
6806800H30E	November 2009	Updated Section *Installing RTM-ATCA-7350* on page 30.
6806800H30F	February 2010	Updated *Standard Compliances* on page 14

Comments and Suggestions

We welcome and appreciate your comments on our documentation. We want to know what you think about our manuals and how we can make them better.

Mail comments to us by filling out the following online form:
http://www.emersonnetworkpowerembeddedcomputing.com/ > Contact Us > Online Form

In "Area of Interest" select "Technical Documentation". Be sure to include the title, part number, and revision of the manual and tell us how you used it.

Introduction

1

1.1 Overview of RTM-ATCA-7350

The ATCA-7350 Rear Transition Module (RTM) of the server blade (hereinafter referred to as RTM-ATCA-7350) must work with the server blade ATCA-7350. RTM-ATCA-7350 provides external interfaces for the connected server blade.

RTM-ATCA-7350 provides the following functions:

- RTM-ATCA-7350 provides two daughter card connectors. RTM-ATCA-7350 supports the following daughter cards:
  - Gigabit Ethernet (GE) daughter card
  - Fiber Channel (FC) daughter card

  The daughter cards provide external interfaces for the server blade.
- As a manageable module of the server blade, RTM-ATCA-7350 is managed by the Intelligent Platform Management Controller (IPMC) of the server blade.
- The IPMC monitors the working status of RTM-ATCA-7350. In addition, the Field Replaceable Unit (FRU) data is stored in the EEPROMs on the RTM itself and the daughter cards.

1.2 Mechanical Data

The following table lists the mechanical specifications of RTM-ATCA-7350.

Table 1-1 Mechanical Specifications of RTM-ATCA-7350

Item	Specification
Maximum weight	0.76 kg
Length x width x height	322.3 mm x 70 mm x 29 mm

1.3 Standard Compliances

The product is designed to meet the following standards.

Table 1-2 Standard Compliances

Standard	Description
UL 60950-1 EN 60950-1 IEC 60950-1 CAN/CSA C22.2 No 60950-1	Legal safety requirements
CISPR 22 CISPR 24 EN 55022 EN 55024 FCC Part 15 Industry Canada ICES-003 VCCI Japan AS/NZS CISPR 22 EN 300 386 NEBS Standard GR-1089 CORE	EMC requirements (legal) on system level (predefined Emerson Network Power Embedded Computing system)
NEBS Standard GR-63-CORE ETSI EN 300019 series	Environmental requirements
PICMG[1] 3.0	Defines mechanics, blade dimensions, power distribution, power and data connectors, and system management

1. Some PICMG requirements are not fully met. Refer ATCA-7350/RTM-ATCA-7350 Release Notes for more information.

1.4 Ordering Information

When ordering board variants or board accessories, use the order numbers given on the following pages.

1.4.1 Supported Board Models

The following table explains the product nomenclature used for the available board variants.

Table 1-3 Product Nomenclature

Order Number	Description
RTM-ATCA-7350	RTM FOR THE ATCA-7350 BLADE WITH 10G FABRIC SUPPORT (ROHS 5/6)
RTM-ATCA-7350-GE	RTM FOR THE ATCA-7350 BLADE WITH 2 GE INTERFACES (ROHS 5/6)

Table 1-3 Product Nomenclature (continued)

Order Number	Description
RTM-ATCA-7350-2GE	RTM FOR THE ATCA-7350 BLADE WITH 4 GE INTERFACES (ROHS 5/6)
RTM-ATCA-7350-FC	RTM FOR THE ATCA-7350 BLADE WITH 2 FC INTERFACES (ROHS 5/6)

1.4.2 Board Accessories

As of the printing date of this manual, the following board accessories were available.

Table 1-4 Available Board Accessories

Board Accessories	Order Number
Gigabit Ethernet (GE) daughter card	MEZC-RTM-7150-GE
Fiber Channel (FC) daughter card[1]	MEZC-RTM-7150-FC

1. Optical modules for the FC daughter card must be obtained separately. Recommended modules are:
FINISAR FTRJ8519P1BNL-HW
FINISAR FTRJ8519P2BNL-HW

Hardware Preparation and Installation

2

2.1 Overview

This chapter describes:

- Unpacking and inspecting RTM-ATCA-7350
- Precautions during the operation
- Preparations before installation
- Installation procedure
- Installing and replacing daughter cards
- Connection of external cables
- Removal procedure

2.2 Unpacking and Inspecting RTM-ATCA-7350

NOTICE

Damage of Circuits
Electrostatic discharge and incorrect installation and removal of the product can damage circuits or shorten their life.
Before touching the product or electronic components, make sure that your are working in an ESD-safe environment.

Shipment Inspection

To inspect the shipment, perform the following steps.

1. Verify that you have received all items of your shipment:
   Printed "Getting Started" guide
   RTM-ATCA-7350
   Any optional items ordered
2. Check for damage and report any damage or differences to the customer service.

3. Remove the desiccant bag shipped together with the blade and dispose of it according to your country's legislation.

The product is thoroughly inspected before shipment. If any damage occurred during transportation or any items are missing, please contact our customer's service immediately.

2.3 Environmental and Power Requirements

The following environmental and power requirements are applicable to the board.

2.3.1 Environmental Requirements

Table 2-1 Environmental Requirements

Requirement	Operating	Non-Operating
Temperature	+5ºC (41ºF) to +40ºC (104ºF) (normal operation) according to NEBS Standard GR-63-CORE -5ºC to +55ºC (short term operation) according to NEBS Standard GR-63-CORE	-40ºC (-40ºF) to +70ºC (158ºF) (may be further limited by installed accessories)
Temp. Change	+/- 0.25ºC/min or 15ºC/h (59ºF/h) according to NEBS Standard GR-63-CORE	+/- 0.25ºC/min or 15ºC/h (59ºF/h)
Rel. Humidity	5% to 85% non-condensing according to Emerson Network Power Embedded Computing-internal environmental requirements	5% to 85% non-condensing according to Emerson Network Power Embedded Computing-internal environmental requirements
Altitude	<= 4000m	
Vibration	1.0g from 5 to 100 Hz and back to 5 Hz at a rate of 0.1 octave/minute	5-20 Hz @ 0.01 g^2/Hz 20-200 Hz @ -3.0 dB/octave Random 5-20 Hz @ 1 m^2/Sec^3 Random 20-200 Hz @ -3 m/Sec^2
Shock	Half-sine, 11 m/Sec, 30mSec/sec^2	Blade level packaging Half-sine, 6 mSec at 180 m/Sec^2

Table 2-1 Environmental Requirements (continued)

Requirement	Operating	Non-Operating
Free Fall		1,200 mm (Packaged) /all edges and corners 1.0m (Packaged) per ETSI 300 019-2-2 (Blade level packaging) 25mm (unpackaged) per GR-63-CORE

2.3.2 Power Requirements

Table 2-2 Power Requirements

Requirement	Operating
Power supply	Provided by the server blade
Maximum power consumption	14.2 W

2.4 Module Installation and Removal

⚠ CAUTION

Personal Injury
Power and communication cables
Touching power and communication cables that are energized may cause injuries.
Make sure that the cables cannot be touched while the product is operating.

NOTICE

Damage of Circuits
Electrostatic discharge and incorrect installation and removal of the product can damage circuits or shorten their life.
Before touching the product or electronic components, make sure that your are working in an ESD-safe environment.

NOTICE

Module Damage
If the blade is not fully aligned with the interface in the backplane, too much force may twist the pins on the blade or backplane.
Do not exert too much force when you insert the blade.

Note the following points at the time of installing RTM-ATCA-7350:

- Make sure that you wear an electrostatic discharge (ESD)-preventive wrist strap to prevent the static electricity from hurting you or damaging the device.
- Keep your personal objects such as your clothes away from RTM-ATCA-7350. To prevent the static electricity on clothing, you need to put on antistatic clothing.
- RTM-ATCA-7350 is installed in the slot paired with the server blade slot at the back side of the shelf. RTM-ATCA-7350 is powered from the payload power of the front board. You should install RTM-ATCA-7350 before payload power of the front board is turned on. Hot swap of the RTM-ATCA-7350 while under power is not supported.
- Hold the ejector handles and the face plate when you insert or remove RTM-ATCA-7350. Do not touch the components inside of the blades.
- Keep the blade vertical when you install RTM-ATCA-7350. Align the blade with the slot and then insert it in the shelf.

2.4.1 Ejector Handles

RTM-ATCA-7350 is powered by the server blade in the slot paired with the RTM-ATCA-7350 slot. RTM-ATCA-7350 does not support hot swap. As shown in Figure 1-4, the face plate of RTM-ATCA-7350 provides an upper and a lower ejector handles. The ejector handles help to insert, remove, fasten, power on, and power off RTM-ATCA-7350.

2.4.2 ESD Prevention

Static electricity may hurt you or damage the device. To minimize the damage, pay attention to the following points:

- Before you operate the device, wear the ESD-preventive wrist strap. Both terminals of the ESD-preventive wrist strap must contact well. One terminal touches your bare skin, and the other is inserted in the jack at the front or back side of the shelf. For details on how to wear the ESD-preventive wrist strap, refer *Wearing the ESD-Preventive Wrist Strap* on page 21.
- Avoid moving your body as much as possible. Movement gathers static electricity around you.
- Do not touch the solder point, pin, or bare circuit.
- Do not leave the device in the place where others can operate it.

- Install the device at once after you take it out of the antistatic package. If you need to lay down the device, place it back in the antistatic package. Do not lay the device on the shelf or cabinet.
- Monitor the temperature and humidity of the equipment room. Warm air decreases the humidity and increases the static electricity in the room.

2.5 Installation Preparations

The installation preparations process includes:

- check the installation environment
- wear the ESD-preventive wrist strap
- remove the blank filler panels
- unpack and check the RTM-ATCA-7350 suite

2.5.1 Wearing the ESD-Preventive Wrist Strap

NOTICE

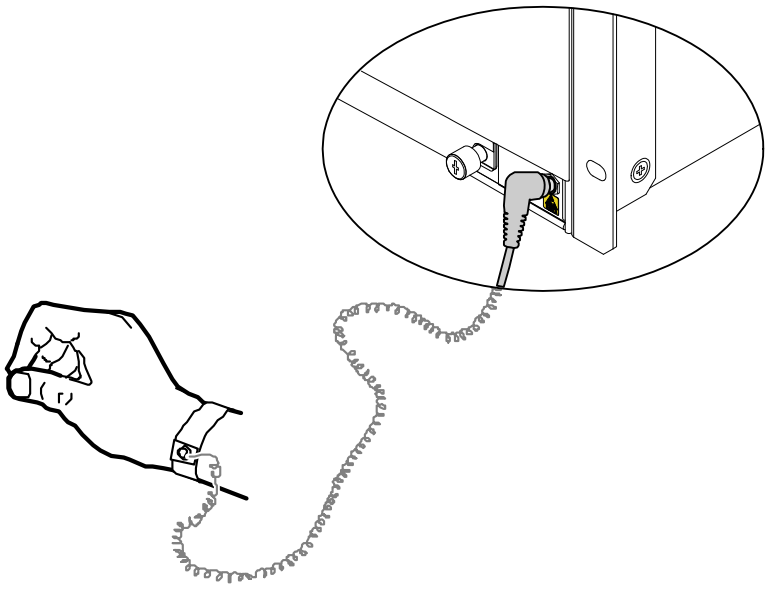
Module Damage

- **Electrostatic discharge can damage circuits or shorten their life.**
- **The ESD-preventive wrist strap prevents only the static electricity on your body from damaging the blade. To prevent the static electricity on your clothes, it is recommended to wear the antistatic clothes. Additionally, you have to make sure that the cabinet and shelf are properly grounded - for details, refer to the corresponding system documentation.**

To wear the ESD-preventive wrist strap, proceed as follows:

1. Wrap the ESD-preventive wrist strap around your wrist, as shown in the figure below.
2. Fasten the latch. Make sure that the ESD-preventive wrist strap well touches your bare wrist.
3. Insert the grounding terminal of the ESD-preventive wrist strap in the jack of the cabinet or shelf.

Figure 2-1 Wearing the ESD-Preventive Wrist Strap



2.5.2 Removing Filler Blades

After a filler blade is removed, place it in the equipment room or other moisture-proof and dust-proof places.

You should install a blank filler blade in the slot after removing the blade. Otherwise, it may effect the ventilation, heat dissipation, electromagnetic shielding and dust prevention of the shelf.

If this is the first installation for the shelf, the blade is fully configured and the shelf is not powered on, you can remove all the filler blades. Then, install blades in the slots in order. This document takes the first installation as an example.

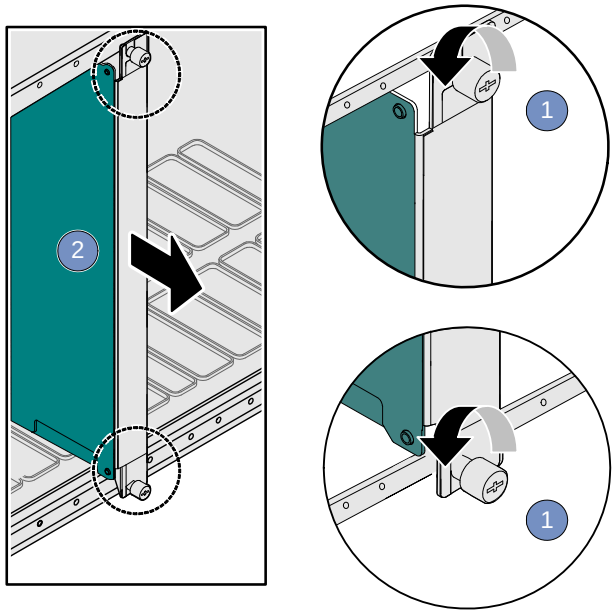
If you want to install multiple blades in the shelf that is powered on, you can remove a filler blade and then install a blade one by one.

If the slot is occupied with a filler blade you have to remove it first.

To remove the filler blade, proceed as follows:

1. As shown in step 1 of the figure below, use a screwdriver to anticlockwise loosen the two captive screws on a filler blade.
2. As shown in step 2 of the figure below, remove the filler blade.

Figure 2-2 Removing the Filler Blade



2.6 Installing and Replacing Daughter Cards

2.6.1 Precautions

NOTICE

Incorrect installation or removal of additional devices or modules may damage the product or the additional devices or modules.
Before installing or removing additional devices or modules, read the respective documentation.

⚠ WARNING

Personal Injury
Power and communication cables
Touching power and communication cables that are energized may cause injuries.
Make sure that the cables cannot be touched while the product is operating.

NOTICE

Electrostatic discharge and incorrect installation and removal of the product can damage circuits or shorten their life.
Before touching the product or electronic components, make sure that your are working in an ESD-safe environment.

NOTICE

Do not exert too much force when you insert the blade.
If the blade is not fully aligned with the interface in the backplane, too much force may twist the pins on the blade or backplane.

Note the following points at the time of installing or replacing components:

- Make sure that you wear an electrostatic discharge (ESD)-preventive wrist strap to prevent the static electricity from hurting you or damaging the device.
- Keep the area where the components reside clean and keep the components away from the heat-generating devices, such as radiators.

- Ensure that your sleeves are tightened or rolled up above the elbow. For safety purpose, it is not recommended to wear jewelry, watch, glasses with metal frame, or clothes with metal buttons.
- Do not exert too much force, or insert or remove the components forcibly. Avoid damage to the components or plug-ins, for example, the pins are bent or get short circuit.

2.6.2 Preparations

Before you install or replace a component, make the following preparations

- Confirming the feasibility of the operation
  - There are available spare parts of the component to be installed or replaced in the equipment warehouse. When the available spare parts are in short supply, contact Emerson Network Power Embedded Computing for help in time.
  - Make sure that the new component is in good condition, without defects such as oxidation, chemical corrosion, missing component, or transportation damage.
  - By reading this document, you are familiar with how to install and replace the component and master the skills required by the operation.
- Checking the environment
  Make sure that the shelf, power supply, temperature, and humidity meet the operating requirements of the blades and components. For details, refer to ATCA-7350 Installation and Use Manual and other related documents.
- Preparing spare parts and tools
  - Prepare the component to be installed or replaced.
    When you hold or transport the component, use the special antistatic package. In addition, you need to tidy, record, and repair the component during routine maintenance.
  - Prepare the cross screwdriver, screws, plastic supports, cooling gel, and ESD-preventive wrist strap.
    The supplier provides a list of tools and negotiates with you to decide the tool provider.
- Confirming installation or changing positions
  Confirm the positions of the cabinet, the shelf, and the slot where RTM-ATCA-7350 is installed. Then, stick a label on the face plate of RTM-ATCA-7350 to avoid wrong operation.
- Others
  If a serious problem occurs and cannot be solved when you install or replace the component, contact Emerson Network Power Embedded Computing for technical support.

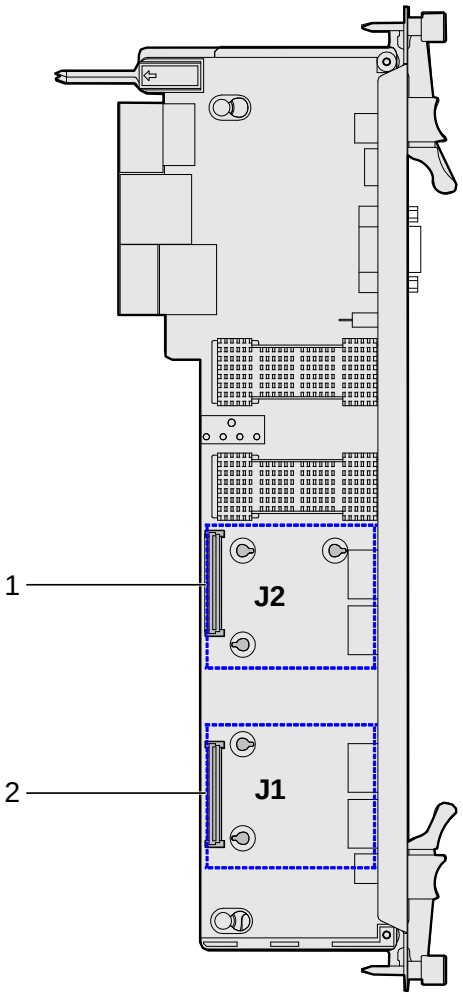
2.6.3 GE Daughter Card

This manual considers the GE daughter card providing two external Ethernet interfaces as an example, and describes how to install the daughter card on and remove it from RTM-ATCA-7350.

2.6.3.1 Installation Positions

When the GE daughter card is used with the RTM-ATCA-7350 it can be installed on the daughter card connector J1, J2. The default position as used on the RTM-ATCA-7350-GE is position J2.

Figure 2-3 Structure of RTM-ATCA-7350



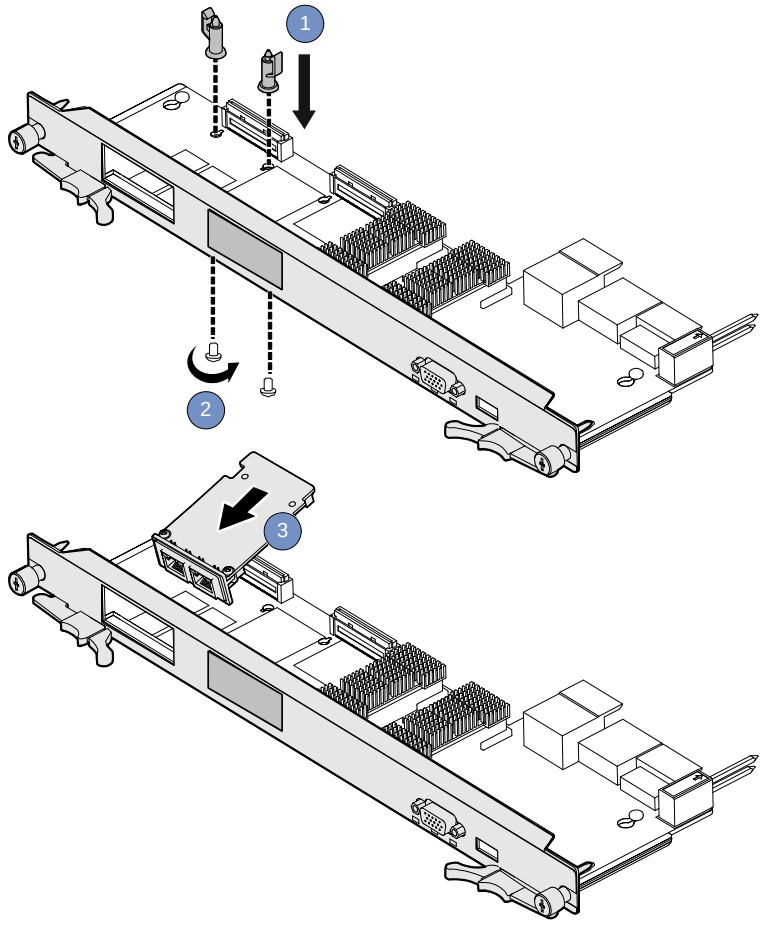
2.6.3.2 Installing the GE Daughter Card

To install the GE daughter card, proceed as follows.

1. Wear the ESD-preventive wrist strap. For more information refer, *Wearing the ESD-Preventive Wrist Strap* on page 21.
2. Lay RTM-ATCA-7350 where the GE daughter card is to be installed on the antistatic desktop.

3. As shown in step 1 of the figure below, insert two plastic supports vertically in the holes used to fasten the GE daughter card.
4. As shown in step 2 of the figure below, at the back side of RTM-ATCA-7350, use a screwdriver to clockwise fasten the two screws used to fix the plastic supports.
5. Take the GE daughter card out of the antistatic package.
6. Insert the GE daughter card in RTM-ATCA-7350 by facing the daughter card at an angle of 45° to the RTM. Align the daughter card connector with the connector on RTM-ATCA-7350, and the daughter card positioning holes with the plastic supports on RTM-ATCA-7350. Exert even power downwards until the daughter card connector is fully inserted into the connector on RTM-ATCA-7350 and the daughter card is fastened by the plastic latches. See step 3 in the figure below.

Figure 2-4 Installing the GE Daughter Card



7. Insert RTM-ATCA-7350 with the GE daughter card installed in the shelf. For more information refer, *Installing RTM-ATCA-7350* on page 30.

After installation, check if RTM-ATCA-7350 can be powered on and work normally. Use the network cable to connect RTM-ATCA-7350 to the external network. Check if the network is connected properly and monitor whether the network port indicator is normal.

2.6.3.3 Replacing the GE Daughter Card

To replace the GE daughter card, proceed as follows.

1. Wear the ESD-preventive wrist strap. For more information refer, *Wearing the ESD-Preventive Wrist Strap* on page 21.
2. Remove the RTM-ATCA-7350 whose GE daughter card is to be replaced. For more information refer, *Removing RTM-ATCA-7350* on page 32.
3. Open the plastic latches fastening the GE daughter card.
4. Exert even force upwards until the daughter card connector is removed from the connector on RTM-ATCA-7350. Remove the daughter card by facing the daughter card at an angle of 45° to the RTM.
5. Place the removed GE daughter card in an antistatic package.
6. Take the new GE daughter card out of the antistatic package.
7. Insert the GE daughter card in RTM-ATCA-7350 by facing the daughter card at an angle of 45° to the RTM. Align the daughter card connector with the connector on RTM-ATCA-7350, and the daughter card positioning holes with the plastic supports on RTM-ATCA-7350. Exert even power downwards until the daughter card connector is fully inserted into the connector on RTM-ATCA-7350 and the daughter card is fastened by the plastic latches.
8. Install RTM-ATCA-7350 whose GE daughter card is replaced. For more information refer, *Installing RTM-ATCA-7350* on page 30.

After replacement, check if RTM-ATCA-7350 can be powered on and work normally. Use the network cable to connect RTM-ATCA-7350 to the external network. Check if the network is connected properly and monitor whether the network port indicator is normal.

2.6.4 FC Daughter Card

This section describes how to install the daughter card on and remove it from RTM-ATCA-7350.

2.6.4.1 Installation Positions

When the FC daughter card is used with the RTM-ATCA-7350 it can be installed on the daughter card connector J1. The RTM-ATCA-7350 provides space for one FC daughter card. Use of the FC daughter card excludes use of the GE daughter card.

2.6.4.2 Installing the FC Daughter Card

To install the FC daughter card, proceed as follows.

1. Wear the ESD-preventive wrist strap. For more information refer, *Wearing the ESD-Preventive Wrist Strap* on page 21.
2. Lay RTM-ATCA-7350 where the FC daughter card is to be installed on the antistatic desktop.
3. Insert two plastic supports vertically in the holes used to fasten the FC daughter card.
4. At the back side of RTM-ATCA-7350, use a screwdriver to clockwise fasten the two screws used to fix the plastic supports.
5. Take the FC daughter card out of the antistatic package.
6. Insert the FC daughter card in RTM-ATCA-7350 by facing the daughter card at an angle of 45° to the RTM. Align the daughter card connector with the connector on RTM-ATCA-7350, and the daughter card positioning holes with the plastic supports on RTM-ATCA-7350. Exert even power downwards until the daughter card connector is fully inserted into the connector on RTM-ATCA-7350 and the daughter card is fastened by the plastic latches.
7. Insert RTM-ATCA-7350 with the FC daughter card installed in the shelf. For more information refer, *Installing RTM-ATCA-7350* on page 30.

After installation, check if RTM-ATCA-7350 can be powered on and work normally. Use the optical fiber to connect RTM-ATCA-7350 to the external storage system. Check if RTM-ATCA-7350 can transmit data normally and monitor whether the FC status indicator is normal.

2.6.4.3 Replacing the FC Daughter Card

To replace the FC daughter card, proceed as follows.

1. Wear the ESD-preventive wrist strap. For more information refer, *Wearing the ESD-Preventive Wrist Strap* on page 21.
2. Remove the RTM-ATCA-7350 whose FC daughter card is to be replaced. For more information refer, *Removing RTM-ATCA-7350* on page 32.
3. As shown in step 1 of the figure below, open the plastic latches fastening the FC daughter card.
4. Exert even force upwards until the daughter card connector is removed from the connector on RTM-ATCA-7350. As shown in step 2 of the figure below, remove the daughter card by facing the daughter card at an angle of 45° to the RTM.

5. Place the removed FC daughter card in an antistatic package.
6. Take the new FC daughter card out of the antistatic package.
7. Insert the FC daughter card in RTM-ATCA-7350 by facing the daughter card at an angle of 45° to the RTM. Align the daughter card connector with the connector on RTM-ATCA-7350, and the daughter card positioning holes with the plastic supports on RTM-ATCA-7350. Exert even power downwards until the daughter card connector is fully inserted into the connector on RTM-ATCA-7350 and the daughter card is fastened by the plastic latches. See step 3 in the figure above.
8. Install RTM-ATCA-7350 whose FC daughter card is replaced. For more information refer, *Installing RTM-ATCA-7350* on page 30.

After replacement, check if RTM-ATCA-7350 can be powered on and work normally. Use the optical fibre to connect RTM-ATCA-7350 to the external storage system. Check if RTM-ATCA-7350 can transmit data normally and monitor whether the FC status indicator is normal.

2.7 Installing and Removing the RTM-ATCA-7350

2.7.1 Installing RTM-ATCA-7350

NOTICE

Product Damage
You can install RTM-ATCA-7350 into a system if the front blade is already installed or if it is not installed. In case the front blade is already installed, its payload has to be powered down first.

Installation Procedure with Installed Front Blade

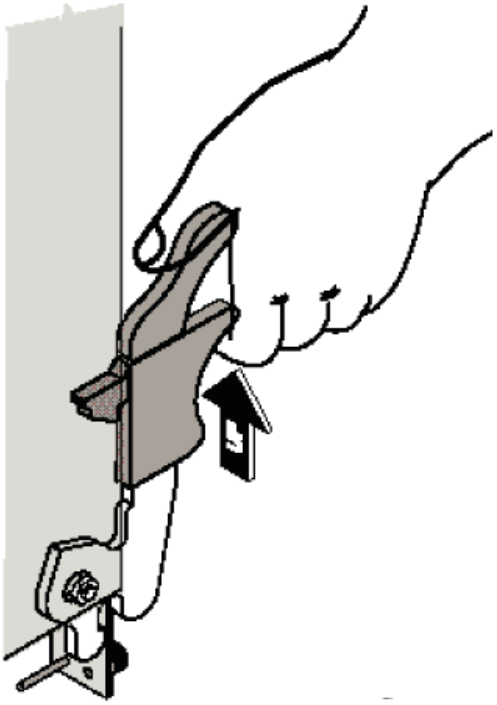
The following procedure describes the installation of RTM-ATCA-7350. It assumes that your system is powered on. If your system is powered off, you can disregard the blue LED and thus skip the respective step. In this case it is a purely mechanical installation. The same applies to an installation without an installed front blade. In this case disregard the LEDs and skip the respective step.

1. Wear the ESD-preventive wrist strap. For more information refer, *Wearing the ESD-Preventive Wrist Strap* on page 21.
2. Unlatch the lower handle of the front blade outward by squeezing the lever and the latch together and turning the handle outward only enough to unlatch the handle from the face plate, that means until you feel a resistance. Do not rotate the handle fully outward.

The blue LED blinks indicating that the shelf manager is informed about the desire of the blade to power down the payload of the front blade and the power-down process is ongoing.

3. Wait until the blue LED of the front blade is permanently ON. A permanently switched ON LED indicates that the payload of the front blade has been powered down.
4. Remove the front blade. For instructions on how to remove the blade, refer to *Section 2.7.2.2 Removing the ATCA-7350* in *ATCA-7350 Installation and Use* manual.
5. Take RTM-ATCA-7350 out of the antistatic package.
6. Fully open the upper and lower ejector handles of the RTM.
7. Align the upper and lower sides of RTM-ATCA-7350 with the guide rails (the edges of the slot). Slide RTM-ATCA-7350 along the guide rails until the positioning pins of RTM-ATCA-7350 are inserted in the positioning holes in the shelf.

Figure 2-5 Installing RTM-ATCA-7350



8. Make sure that the ejector handles are fastened to the beam. Close the upper and lower ejector handles inwards until the inner sides of the ejector handles are attached to the face plate.
9. Use the screwdriver to fasten the captive screws clockwise to fix RTM-ATCA-7350. The LEDs of the RTM are off now.

10. Insert the main blade. For instructions on how to install the main blade, refer to *Section 2.7.1.1 Installing the ATCA-7350 in a Powered Shelf* in *ATCA-7350 Installation and Use* manual.

11. Close the handles of the front blades. The LEDs; OOS LED, Blue LED, and healthy LED of RTM are on.

12. Wait until the blue LED on the RTM is OFF.
    A switched off blue LED indicates that the payload of the RTM has become active.

2.7.2 Removing RTM-ATCA-7350

NOTICE

Product Damage
You should power off the front blade before removing RTM-ATCA-7350.

To remove RTM-ATCA-7350, proceed as follows:

1. Wear the ESD-preventive wrist strap. For more information refer, *Wearing the ESD-Preventive Wrist Strap* on page 21.

2. Unlatch the lower handle outward by squeezing the lever and the latch together and turning the handle outward only enough to unlatch the handle from the face plate, that means until you feel a resistance. Do not rotate the handle fully outward.
   The blue LED blinks indicating that the shelf manager is informed about the desire of the blade to power down the payload of both the front blade and the RTM and the power-down process in ongoing.

3. Wait until the blue LED of the RTM is permanently ON. A permanently switched ON LED indicates that the payload of the RTM has been powered down.

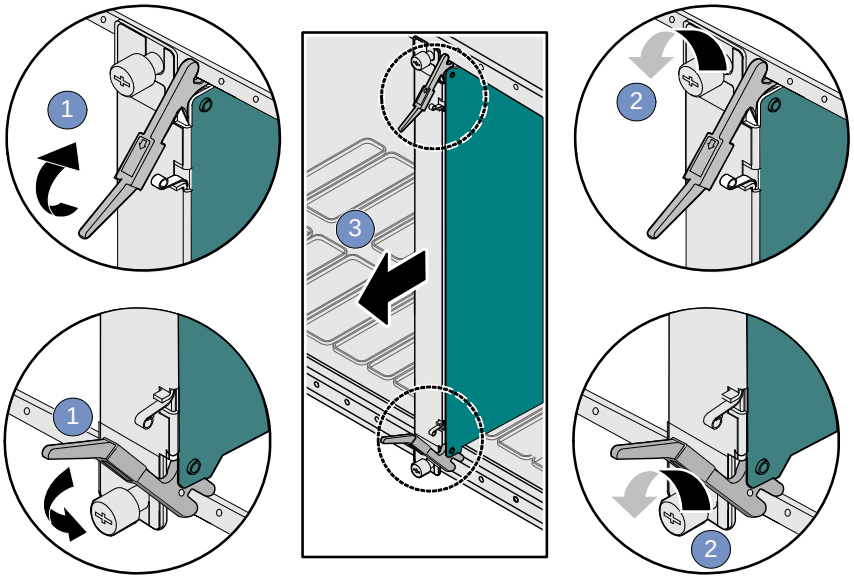
4. As shown in step 2 of the figure below, use the screwdriver to unfasten the captive screws of the RTM anticlockwise.

5. As shown in step 1 of the figure below, fully open the upper and lower ejector handles.

6. As shown in step 3 of the figure below, remove RTM-ATCA-7350 along the guide rails.

7. Place RTM-ATCA-7350 in the antistatic package.

Figure 2-6 Removing RTM-ATCA-7350



2.8 Connecting External Cables

After RTM-ATCA-7350 is installed in the shelf, you can connect the keyboard, video, and mouse (KVM) cables.

If RTM-ATCA-7350 is configured with the GE daughter card or FC daughter card, it provides the external GE network ports or external FC interfaces. Network cables or optical fibers can be connected to RTM-ATCA-7350. You can choose to use one or more daughter cards according to actual applications.

Refer *Daughter Cards* on page 47, for the functions of the daughter cards of RTM-ATCA-7350.

NOTICE

Cable Damage

- **There is a back cable trough at the back side of the shelf. You need to arrange and identify all cables and then bind and fasten them in the back cable through after connecting them.**
- **If you use excessive force when installing cables, the cables may be damaged.**
- **Do not exert too much force when you insert or remove the cables. Do not twist or tear the cables in any condition.**

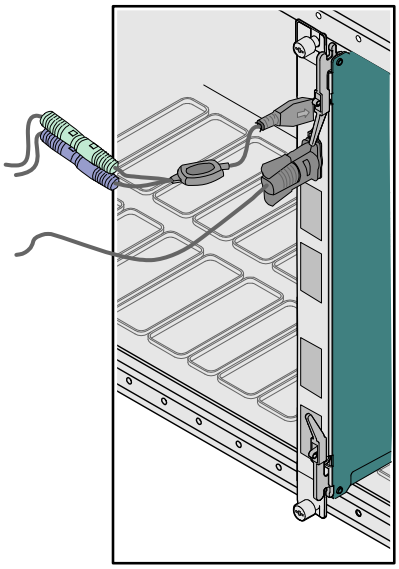
2.8.1 Connecting KVM Cables

The figure below shows the method of connecting the Keyboard, Video, Mouse (KVM) cables to RTM-ATCA-7350 when connecting PS/2 compatible keyboard and mouse using a PS/2-USB converter. USB based keyboard and mouse can also be attached to the RTM by using a USB hub.

NOTICE

Product Damage
You have to use matching interfaces for the KVM cables.
Use a PS/2-USB converter when connecting to PS/2 based keyboard and mouse cables.
Use a USB hub when connecting to USB based keyboard and mouse cables.

Figure 2-7 Connecting the KVM Cables to RTM-ATCA-7350



2.8.2 Connecting Network Cables

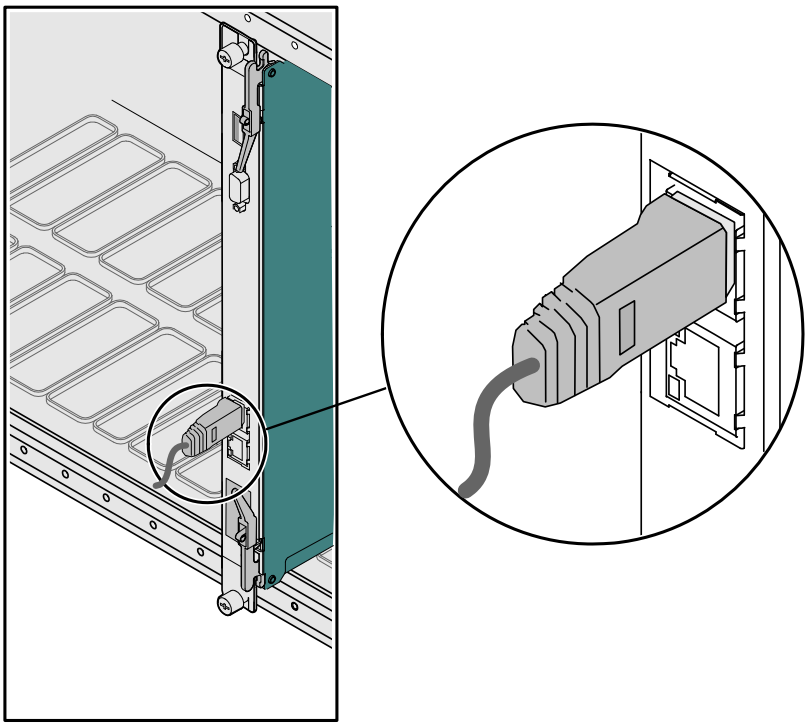
NOTICE

Electromagnetic Radiation
Make sure that the cable and connectors of the network cable are with shielding function and that both ends of the shielded layer of the network cable are grounded. It is recommended that the network cable is grounded through the metal cover of the network port connector.

When RTM-ATCA-7350 is configured with the GE daughter card, it provides two external Ethernet interfaces with 10/100/1000M Base-T auto-negotiation. Network cables are used to connect RTM-ATCA-7350 to the external network.

The figure below shows the method of connecting the network cables to RTM-ATCA-7350.

Figure 2-8 Connecting the Network Cables to RTM-ATCA-7350

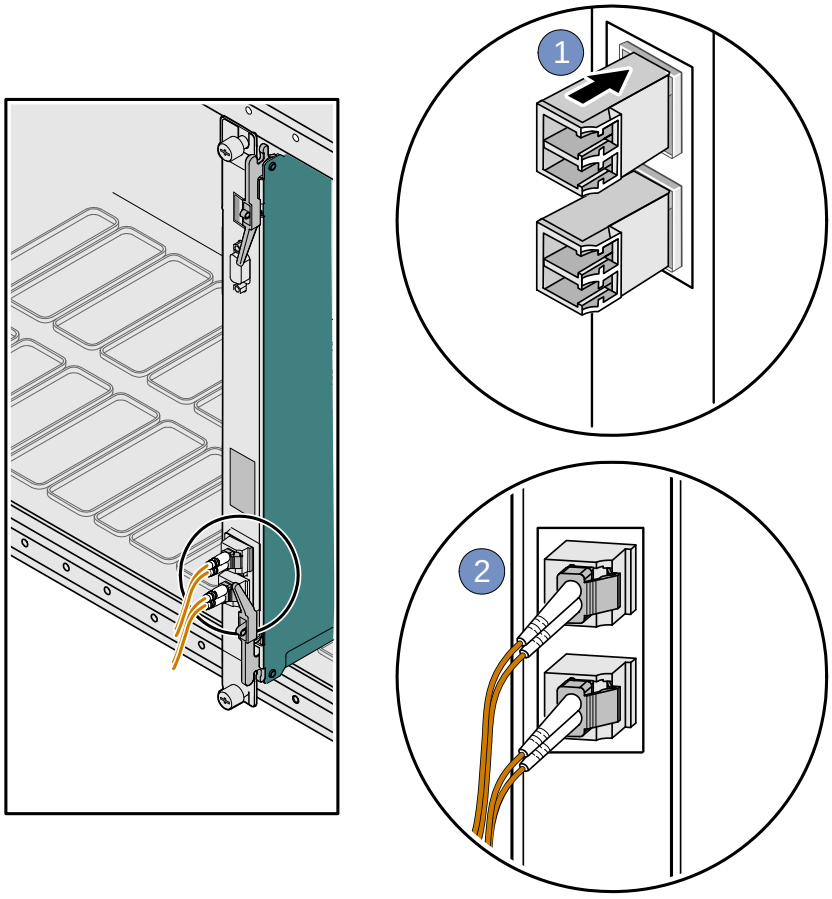


2.8.3 Connecting Optical Fibers

When RTM-ATCA-7350 is configured with the FC daughter card, it provides two external 2G FC interfaces. Optical fibers are used to connect RTM-ATCA-7350 to the external Storage Area Network (SAN) storage system. Optical modules for the FC daughter cards must be obtained separately. Recommended modules are FINISAR FTRJ8519P1BNL-HW, FINISAR FTRJ8519P2BNL-HW.

As shown in steps 1 and 2 in the figure below, insert the optical module in the FC interface and then insert the optical fibers in the optical module.

Figure 2-9 Connecting the Optical Fibers to RTM-ATCA-7350



Controls, LEDs and Connectors

3

3.1 Overview

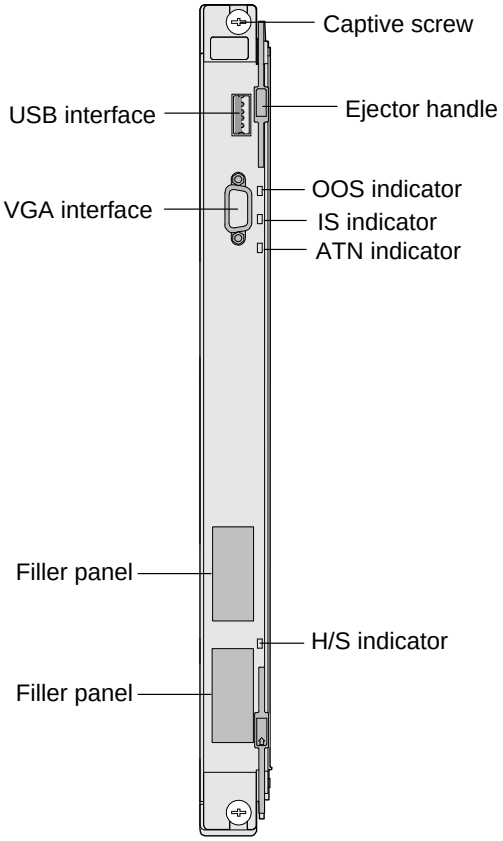
This chapter describes:

- Face plate connectors
- Face plate LEDs
- Rear panel connectors

3.2 Face Plate Connectors and LEDs

The following figure shows the face plate of RTM-ATCA-7350 without daughter cards installed.

Figure 3-1 Face Plate of RTM-ATCA-7350



You need to install a filler blade in the position that is not occupied by the face plate of the daughter card.

3.2.1 LEDs

The face plate of RTM-ATCA-7350 provides the following indicators:

- Out of service (OOS) indicator
- In service (IS) indicator
- Hotswap (H/S) indicator

The GE daughter card provides the network port indicators and the FC daughter card provides the FC status indicators. You can monitor these indicators to diagnose the current status of RTM-ATCA-7350.

The following table lists the indicators on the RTM-ATCA-7350 face plate.

Table 3-1 Indicators on the RTM-ATCA-7350 *Face Plate*

Indicator	Color	Meaning	Description
OOS	Red or amber	Service status indicator	• The RTM-ATCA-7350 turns the red LED on when transitioning from FRU M3 to M4 state if in local control state. It is the responsibility of the application to change the status of the LED via IPMI command. • The RTM-ATCA-7350 turns the LED off when transitioning from FRU state M6 to M1 if in local control state.
IS	Red, green or amber	In service indicator	The IS LED is off when the payload processor starts running. Payload Management software is responsible for controlling the IS LED.
H/S	Blue	Hot swap indicator	• Off: RTM-ATCA-7350 is in activated state. • On: RTM-ATCA-7350 is inserted, but in deactivated state or not powered on. • Blinking at the long blink rate[1]: RTM-ATCA-7350 is requesting activation. • Blinking at the short blink rate[2]: RTM-ATCA-7350 is requesting deactivation.
ATN	Amber	Attention indicator	The ATN LED is set to off when the payload processor starts running. Payload Management software is responsible for controlling the ATN LED.

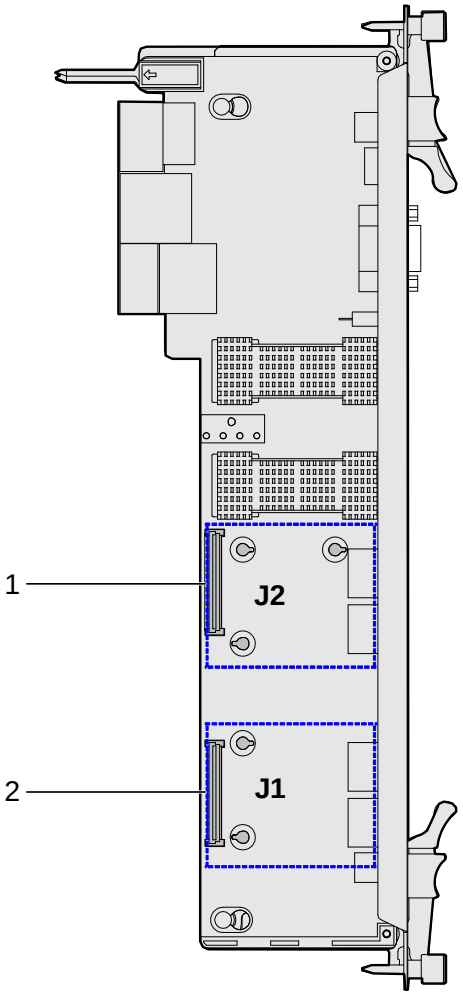
1. Blinking at the long blink rate means that the indicator is on for 900 ms and then off for 100 ms alternatively.

2. Blinking at the short blink rate means that the indicator is on for 100 ms and then off for 900 ms alternatively.

3.2.2 Connectors

RTM-ATCA-7350 provides two daughter card connectors, as shown in the following figure.

Figure 3-2 Structure of RTM-ATCA-7350



In the above figure:

Label	Description
1	Daughter card connector J2
2	Daughter card connector J1

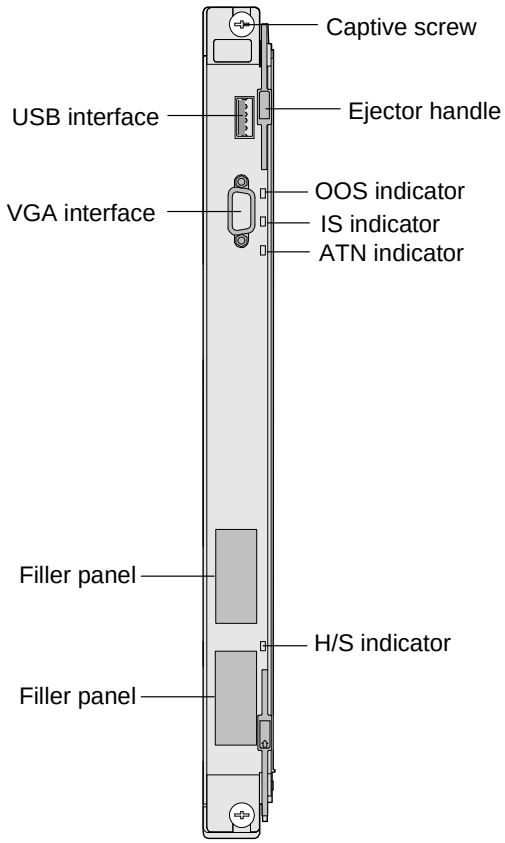
3.2.2.1 RTM-ATCA-7350 Face Plate

Face plate of the RTM-ATCA-7350 provides:

- One USB interface
- One VGA DB15 Port

- OOS indicator
- IS indicator
- ATN indicator
- H/S indicator

Figure 3-3 Connectors and Indicators of RTM-ATCA-7350



3.2.2.1.1 USB Port

RTM-ATCA-7350 provides a single port USB connector on the face plate. The USB port is compliant to the USB 1.1 specification. The following USB Port Pin Assignment table describes the pinout information.

Figure 3-4 RTM-ATCA-7350 Front Plate USB Connector Pinout

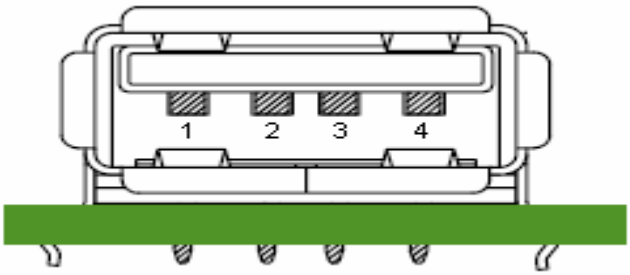


Table 3-2 USB Port Pin Assignment

Pin	Pin Name	Description
1	+5V	+5V Power Supply, Max 500mA each port.
2	Data-	Differential Data transmitting pair.
3	Data+	
4	GROUND	Ground, connected to the logic GND of ATCA-7350.

3.2.2.1.2 VGA Port

ATCA-7350 provides its VGA output port through RTM-ATCA-7350. The VGA port on RTM-ATCA-7350 use a DB15 female connector with a signal definition compatible to the standard VGA plug.

Figure 3-5 RTM-ATCA-7350 Front Plate VGA Port Pinout

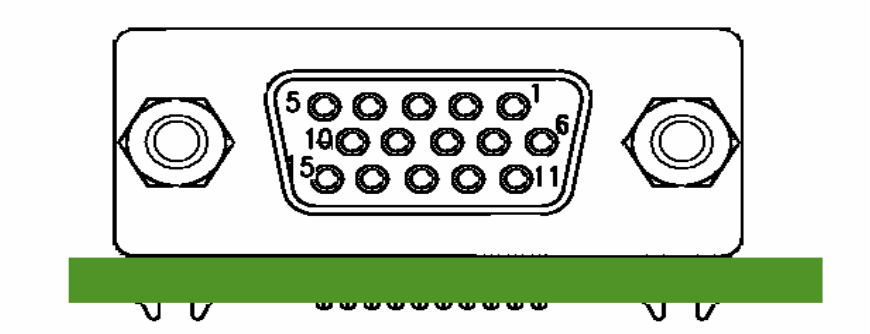


Table 3-3 VGA Port Pin Assignment

Pin	Pin Name	Description
1	RED	Analog red video output signal.
2	GREEN	Analog green video output signal.
3	BLUE	Analog blue video output signal.
4	RESERVED1	Reserved.
5	RESERVED2	Reserved on RTM-ATCA-7350.
6	GROUND1	Connected to the logic ground of RTM-ATCA-7350.
7	GROUND2	Connected to the logic ground of RTM-ATCA-7350.
8	RESERVED3	Reserved on RTM-ATCA-7350.
9	RESERVED4	Reserved, Connected to 5VCC on RTM-ATCA-7350 through a PTC resistor.
10	GROUND3	Connected to the logic ground of RTM-ATCA-7350.
11	RESERVED5	Reserved.
12	DDC DATA	DDC data pin for CRT.
13	HS	Horizontal sync for Monitor.
14	VS	Vertical sync for Monitor.
15	DDC CLK	DDC pin SCL for CRT.

3.3 Zone 3 Connectors

Zone 3 is composed of three connectors, P30, P31, and P32. The three connectors are used to connect RTMs with RTM-ATCA-7350s. Zone 3 defines the following signals:

- USB (USB)
- VGA
- IPMC SMBus
- Power (VCC 12VDC, VSBY 5V5)
- PCI-E Channels
- General control signals (RTM PRESENT, RTM RST, LEDs)
- Fabric channel port 0, port 1, port 2, port 3 for the ATCA-7350

3.3.1 P30 Pinout

P30 uses a common 2mm HM connector. P31 uses a half-height ZD connector. P32 uses a ZD connector.

Refer to the PICMG specification for the location of the connectors.

The following table shows the P30 pinout. PinA1 on the server blade side is on the top of the connector while the server blade is placed top side upwards and the face plate is left.

RTM_EN0_ and RTM_EN_ are signals that indicate the RTM is firmly inserted.

Table 3-4 PIN 30 Pinout

HM	A	B	C	D	E
1	VSB5V	RTM_EN0	GND	RTM_OOSR_	RTM_HEALTHY_G_
2	VSB5V	RTM_HOTSPWAP_	GND	RTM_HEALTHY_R	RTM_OOSY_
3	+12V	RTM_TOP_EJECTOR_	GND	RTM_SDA	RTM_SCL
4	+12V	RT;_EPROM_WE	GND	VGA_RED	CPLD_RTM_TDI
5	+12V	RTM_BOT_EJECTOR_	GND	VGA_BLUE	RTM_JTAG_TDO
6	+12V	RTM_KBCLK	GND	VGA_GREEN	CPLD_RTM_TCK
7	+12V	RTM_MSDAT	GND	VGA_HS	CPLD_RTM_TMS
8	+12V	RTM_MSCLK	GND	VGA_VS	CPLD_RTM_TRST
9	+12V	RTM_KBDAT	GND	VGA_DDCCLK	RTM_PWR_GOOD
10	+12V	RTM_USB_P	GND	VGA_DDCDAT	RTM_LM80_INT_
11	+12V	RTM_USB_N	GND	RTM_SBY_RST	RTM_EN_

3.3.2 P31 Pinout

P31 is used for port1 and port2 signals of the Fabric interface, and the PCIE signals from MCH.

PinA1 on the sever board side is on the top of the connector, and on the left column of the P31 connector while the server board is placed top side upwards and the front panel is on the left.

Table 3-5 PIN 31 Pinout

ZD1	A	B		C	D	
1	RTM_SYSLED_G_	RESERVED	GND	RTM_SYSLED_R_	RESERVED	GND
2	RTM_FC2_TX2_H	RTM_FC2_TX2_L	GND	RTM_FC1_TX2_H	RTM_FC1_TX2_L	GND
3	RTM_FC2_RX2_H	RTM_FC2_RX2_L	GND	RTM_FC1_RX2_H	RTM_FC1_RX2_L	GND
4	RTM_FC2_TX1_H	RTM_FC2_TX1_L	GND	RTM_FC1_TX1_H	RTM_FC1_TX1_L	GND
5	RTM_FC2_RX1_H	RTM_FC2_RX1_L	GND	RTM_FC1_RX1_H	RTM_FC1_RX1_L	GND
6	RTM_PE7_PRSNT_R_	RTM_PE7_RST_	GND	MCH_EXP7_RXP3	MCH_EXP7_RXN3	GND
7	RTM_EXP7_RXP3	RTM_EXP7_RXN3	GND	MCH_EXP7_RXP2	MCH_EXP7_RXN2	GND

Table 3-5 PIN 31 Pinout (continued)

ZD1	A	B		C	D	
8	RTM_EXP7_RXP2	RTM_EXP7_RXN2	GND	MCH_EXP7_RXP1	MCH_EXP7_RXN1	GND
9	RTM_EXP7_RXP1	RTM_EXP7_RXN1	GND	MCH_EXP7_RXP0	MCH_EXP7_RXN0	GND
10	RTM_EXP7_RXP0	RTM_EXP7_RXN0	GND	RTM_PCIE7_CLK_P	RTM_PCIE7_CLK_N	GND

3.3.3 P32 Pinout

P32 is used for port1 and port4 signals of the Fabric interface, and the PCIE signals from front board.

PinA1 on the server board side is on the top of the connector, and on the left column of the P32 connector while the server board is placed top side upwards and the front panel is on the left.

Table 3-6 PIN 32 Pinout

ZD2	A	B		C	D		E	F		G	H	
1	RTM_PE_SDA	RTM_PE_SCL	GND	MCH_EXP6_RXP1	MCH_EXP6_RXN1	GND	RTM_EXP6_RXP3	RTM_EXP6_RXN3	GND	MCH_EXP6_RXP3	MCH_EXP6_RXN3	GND
2	RTM_EXP6_RXP1	RTM_EXP6_RXN1	GND	MCH_EXP6_RXP0	MCH_EXP6_RXN0	GND	RTM_EXP6_RXP2	RTM_EXP6_RXN2	GND	MCH_EXP6_RXP2	MCH_EXP6_RXN2	GND
3	RTM_EXP6_RXP0	RTM_EXP6_RXN0	GND	RTM_PCIE6_CLK_P	RTM_PCIE6_CLK_N	GND	RTM_EXP5_RXP3	RTM_EXP5_RXN3	GND	MCH_EXP5_RXP3	MCH_EXP5_RXN3	GND
4	RTM_EXP5_RXP1	RTM_EXP5_RXN1	GND	MCH_EXP5_RXP1	MCH_EXP5_RXN1	GND	RTM_EXP5_RXP2	RTM_EXP5_RXN2	GND	MCH_EXP5_RXP2	MCH_EXP5_RXN2	GND
5	RTM_EXP5_RXP0	RTM_EXP5_RXN0	GND	MCH_EXP5_RXP0	MCH_EXP5_RXN0	GND	RTM_PCIE4_CLK_P	RTM_PCIE4_CLK_N	GND	RTM_PCIE5_CLK_P	RTM_PCIE5_CLK_N	GND
6	RTM_EXP4_RXP1	RTM_EXP4_RXN1	GND	MCH_EXP4_RXP1	MCH_EXP4_RXN1	GND	RTM_EXP4_RXP3	RTM_EXP4_RXN3	GND	MCH_EXP4_RXP3	MCH_EXP4_RXN3	GND
7	RTM_EXP4_RXP0	RTM_EXP4_RXN0	GND	MCH_EXP4_RXP0	MCH_EXP4_RXN0	GND	RTM_EXP4_RXP2	RTM_EXP4_RXN2	GND	MCH_EXP4_RXP2	MCH_EXP4_RXN2	GND
8	RTM_PE6_PRSNT_R_	RTM_PE5_PRSNT_R_	GND	RTM_PE4_PRSNT_	RTM_PE5_WAKE_	GND	RTM_PE6_RST_	RTM_PE5_RST_	GND	RTM_PE4_RST_	RTM_PE4_WAKE_	GND
9	RTM_FC2_TX3_H	RTM_FC2_TX3_L	GND	RTM_FC1_TX3_H	RTM_FC1_TX3_L	GND	RTM_FC2_TX0_H	RTM_FC2_TX0_L	GND	RTM_FC1_TX0_H	RTM_FC1_TX0_L	GND

Table 3-6 PIN 32 Pinout (continued)

ZD2	A	B		C	D		E	F		G	H	
10	RTM_FC2_RX3_H	RTM_FC2_RX3_L	GND	RTM_FC1_RX3_H	RTM_FC1_RX3_L	GND	RTM_FC2_RX0_H	RTM_FC2_RX0_L	GND	RTM_FC1_RX0_H	RTM_FC1_RX0_L	GND

Functional Description

4

4.1 Overview

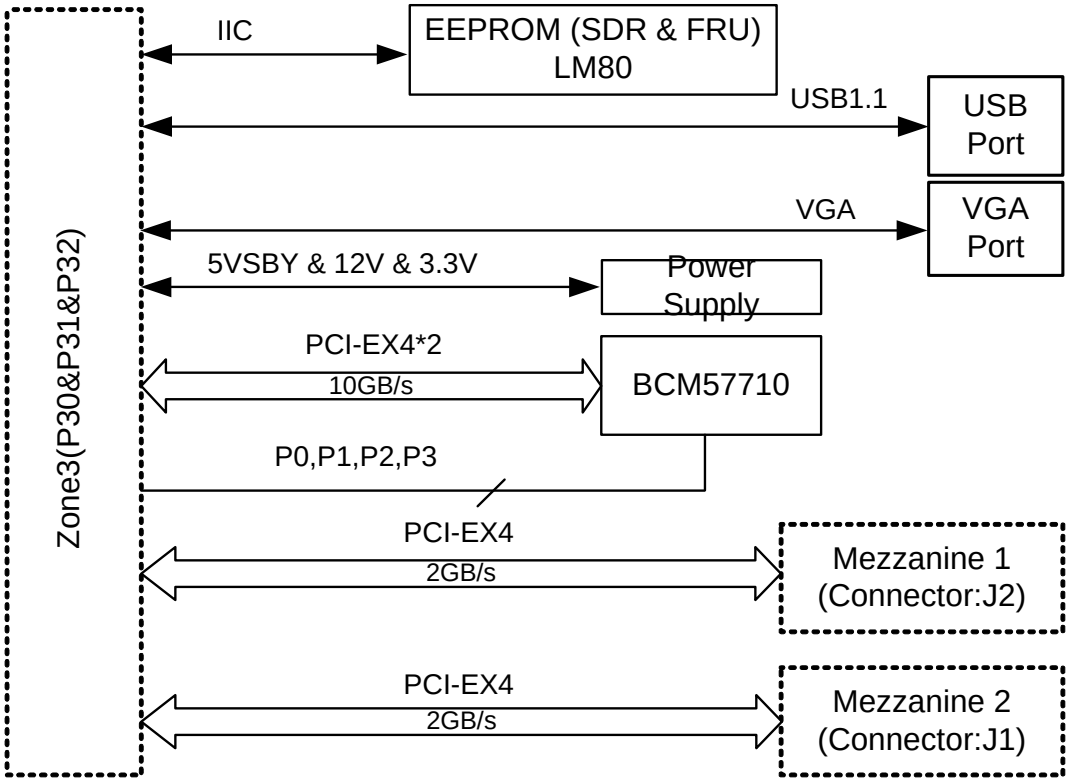
This chapter describes:

- Block diagram
- Daughter cards

4.2 Block Diagram

The following block diagram shows the main components of RTM-ATCA-7350 and how they interact/are connected.

Figure 4-1 Block Diagram of RTM-ATCA-7350



4.3 Daughter Cards

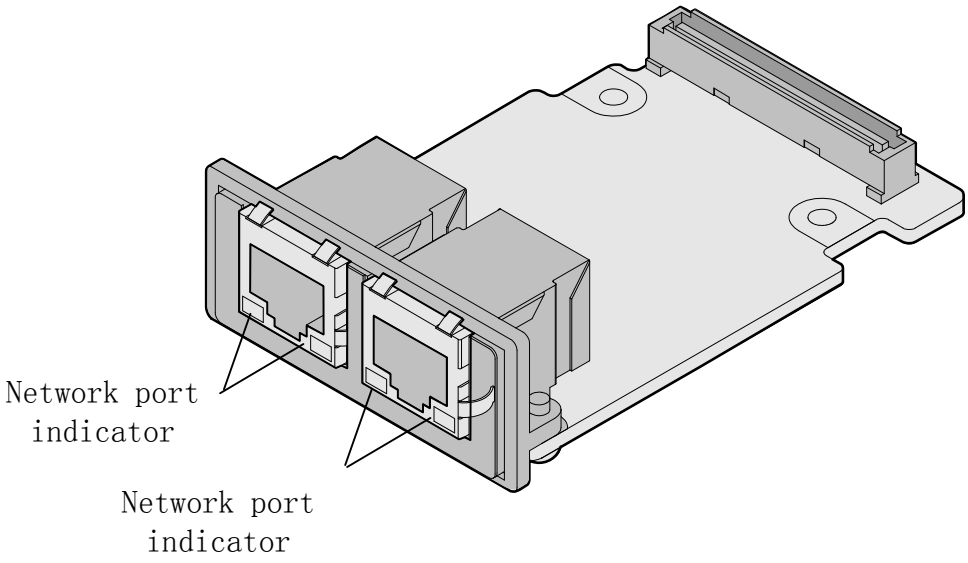
RTM-ATCA-7350 provides two daughter card connectors, you can choose one or two GE daughter cards (single slot) or one FC daughter card (dual slot).

4.3.1 GE Daughter Card

The GE daughter card provides two external Ethernet interfaces; 10/100/1000M Base-T auto-negotiation and RJ-45 interface. The RTM-ATCA-7350 can host one or two GE daughter cards, thus providing up to four external Ethernet interfaces.

The following figure shows the GE daughter card.

Figure 4-2 GE Daughter Card



Indicators

The GE daughter card provides two network port indicators. You can monitor these indicators to diagnose the current status of the external Ethernet interfaces.

The following table lists the two network port indicators provided by the GE daughter card.

Table 4-1 Indicators Provided by the GE Daughter Card

Indicator	Color	Meaning	Description
Network port indicator	Green Amber	Network port working state	• Off: The network port does not work. • Green on: The network port is in Link state. • Amber blinking: The network port is in Active state and is transmitting data.

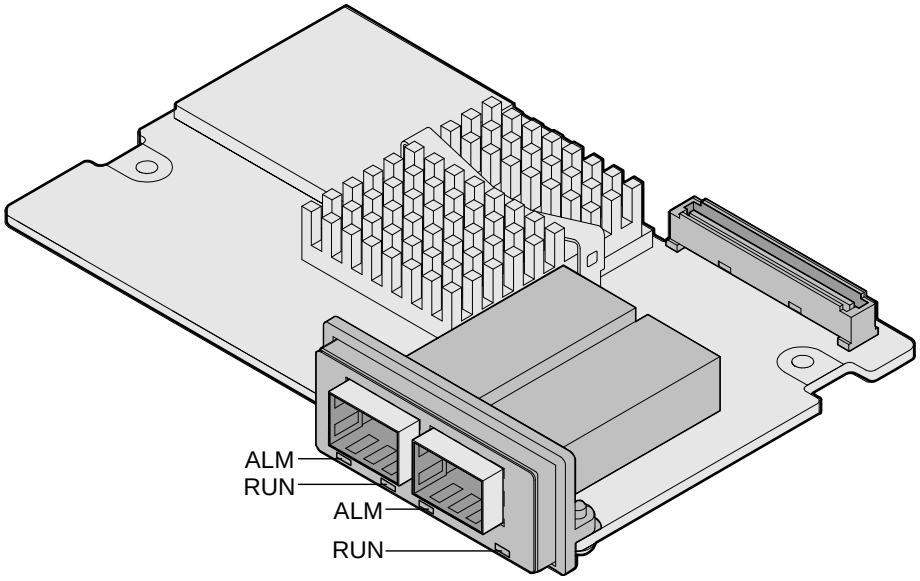
4.3.2 FC Daughter Card

The FC daughter card provides two 2G FC interfaces; FC-AL, FC-SW, point to point, and 1G/2G auto-negotiation. The RTM-ATCA-7350 can host one FC daughter card. Use of the FC daughter card excludes use of the GE daughter card.

Optical modules are used to provide the optical interfaces at the face plate. See *Connecting Optical Fibers* on page 36 for installing the optical modules. Optical modules for the FC daughter card must be obtained separately. Recommended modules are FINISAR FTRJ8519P1BNL-HW. FINISAR FTRJ8519P2BNL-HW.

The following figure shows the FC daughter card.

Figure 4-3 FC Daughter Card



Indicators

The FC daughter card provides the RUN and ALM indicators. You can monitor these indicators to diagnose the current status of the external FC interfaces.

The following table lists the two indicators provided by the FC daughter card.

Table 4-2 Indicators Provided by the FC Daughter Card

Indicator	Color	Meaning	Description
ALM	Amber	FC interface working state	• Green on and amber on: RTM-ATCA-7350 is in the power-on process. • Green off and amber blinking: Signal synchronization is lost. • Green off and amber on: The interfaces are obtaining signals. • Green on and amber off: The interfaces are ready for processing signals. • Green blinking and amber blinking: A fault occurs in the firmware.
RUN	Green		

Related Documentation

A

A.1 Emerson Network Power - Embedded Computing Documents

The Emerson Network Power - Embedded Computing publications listed below are referenced in this manual. You can obtain electronic copies of Emerson Network Power - Embedded Computing publications by contacting your local Emerson sales office. For documentation of final released (GA) products, you can also visit the following website: http://www.emersonnetworkpowerembeddedcomputing.com > Resource Center > Technical Documentation Search. This site provides the most up-to-date copies of Emerson Network Power - Embedded Computing product documentation.

Table A-1 Emerson Network Power - Embedded Computing Publications

Document Title and Source	Publication Number
ATCA-7350 Installation and Use	6806800G59
ATCA-7350: Control via IPMI, Programmer's Reference	6806800H29
MESC-RTM-7150-FC Installation Information	6806800F90
MESC-RTM-7150-GE Installation Information	6806800F89
ATCA-7X50-HDDx-SAS/SATA Installation Information	6806800E28
ATCA-7x50-MEM Installation Information	6806800E27
ATCA-7350/RTM-ATCA-7350 Release Notes	6806800H69

A.2 Related Specifications

For additional information, refer to the following table for related specifications. As an additional help, a source for the listed document is provided. Please note that, while these sources have been verified, the information is subject to change without notice.

Table A-2 Related Specifications

Organization	Document Title
Intel developer.intel.com/design/servers/ipmi	Platform Management FRU Information Storage Definition v1.0 IPMI Specification v1.5
PICMG picmg.org/specifications.stm	PICMG 3.0 Revision 2.0 Advanced TCA Base Specification